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ANNUAL REPORT ON THE ENVIRONMENT

**CHAPTER III**

**ECOLOGICAL  
RESOURCES**

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### III. ECOLOGICAL RESOURCES

This chapter summarizes the status of ecological resources and the actions of public agencies and citizen groups in the management and preservation of these resources.

#### A. ISSUES AND OVERVIEW

Open space and natural habitat continue to be reduced in Fairfax County, primarily as a result of housing, commercial development, and road building. As this resource is reduced, increased emphasis must be placed on protecting, preserving, and enhancing the remaining open space and natural habitat in Fairfax County.

Fairfax County contains a total of 228,538 acres. Of this total, about 70,000 acres are in open space of some type as of January 2000 (see Table III-1). This represents 31% of the County's land area. However, only about 24,700 acres (11%) are in parks or conservation areas. Another 15,800 acres (7%) are in private open space. Finally, about 29,500 acres (13%) are vacant. However, the figure of 31% of the County being in open space does not give a true picture of open space that is valuable for natural habitat. The park acreage consists of active recreation (ball fields, etc.) as well as passive recreation (stream valley parks, nature centers, etc.) Ball fields, while greatly needed in Fairfax County, do not do much for protecting natural habitat. In a like fashion, much private open space consists of mowed areas and isolated trees (not woodlands). Again, this does little for protecting natural habitat. Both active recreation areas and private open space, however, can help the environment by reducing storm water runoff (by allowing storm water to infiltrate into the soil).

<b>Table III-1 Open Space in Fairfax County</b>	
<b>Land Use</b>	<b>Acres</b>
Conservation Areas	1,371
Parks	23,297
Private Open Space – Not Subdivided	556
Private Open Space – Subdivided	15,223
Vacant Land	28,372
Vacant Land with Dilapidated Structures	1,159
<b>Total Open Space</b>	<b>69,978</b>

Source: *Acres of Land by Land Use Category, Supervisor District (January 2000)*, Fairfax County Department of Systems Management for Human Services.

While the 13% of the land that is vacant is often wooded, this land is subject to development. Considering the continuing rapid pace of development in Fairfax County, much of this land will soon become residential space, office space, retail space, etc., and not provide much in the way of protecting natural habitat.

Therefore, Fairfax County needs to undertake stronger efforts in order to protect, preserve, and enhance the environmentally sensitive open space in the County. These efforts include the establishment of a Countywide Natural Resource Inventory, followed by a Countywide Natural Resource Management Plan. Additionally, the County needs an aggressive program seeking easements on privately owned environmentally sensitive land and, as opportunities arise, to purchase environmentally sensitive land.

EQAC commends Fairfax ReLeaf, and their volunteers, in their reforestation efforts. EQAC also commends the Fairfax County Park Authority staff in their efforts toward a building a Countywide Baseline Natural Resource Inventory. EQAC supports the Fairfax County Park Authority in their work toward a Countywide Natural Resource Management Plan.

EQAC also commends the Northern Virginia Soil and Water Conservation District for their leadership in a number of activities that will lead to better management of storm water and protection of stream valleys. Additionally, EQAC commends the Northern Virginia Conservation Trust for pursuing and obtaining easements on privately owned environmentally sensitive land. EQAC is pleased that the Fairfax County Board of Supervisors has entered into a public-private partnership with the Northern Virginia Conservation Trust with the purpose of purchasing or obtaining easements on environmentally sensitive land. Since EQAC had not reported in detail on NVCT activities in previous annual reports, this annual report contains an in-depth report on NVCT.

## **B. PROGRAMS, PROJECTS, AND ANALYSES**

### **1. Fairfax County Park Authority**

The Fairfax County Board of Supervisors created the Fairfax County Park Authority (FCPA) in 1950, authorizing the Park Authority Board to make decisions concerning land acquisition, park development, and operations. As a result, Fairfax County has a system of parks that serve a number of uses, including active recreation such as sports, historic sites and buildings, and environmentally sensitive areas such as forests and stream valley lands.

#### **a. Acquisition of Park Land by FCPA**

The FCPA acquired 737 acres in FY 2001. As a result, FCPA land holdings now total 21,565 acres. Additionally, in FY 2002, the Board of Supervisors dedicated more than 50 parcels containing floodplains or Resource Protections Areas in stream valleys. This dedicated land also included a 332-acre addition to the Scotts Run Nature Preserve.

**b. Green Infrastructure/GIS Mapping**

The Fairfax County Park Authority staff continues to develop a Natural Resource Inventory for the County's park system. In the past, a partial attempt at building a Countywide Baseline Natural Resource Inventory was done by the Ecological Resources Inventory Committee (ERIC). Unfortunately, sufficient funding was not furnished to compete this task and the partially complete ERIC database languished. Eventually, with changes in computer hardware and software, this database became unusable. However, the ERIC data has now been successfully converted to the more modern and accessible Microsoft Access Data Base, but has not yet been edited into a form compatible with the County's GIS program. It is not clear to EQAC that this has been done.

However, progress has been made in that the FCPA has developed a modeling tool to identify significant natural and heritage resource areas for the Park Authority's resource protection and management efforts. Using the County's geographic information system (GIS), FCPA has produced a countywide map of "Green Infrastructure" based on a weighted analysis of significant environmental and historic features.

FCPA evaluated hydrology, tree cover, Chesapeake Bay Resource Protection Areas, wetlands, hydric soils, and unusual biological habitat as part of the natural resource analysis. The Park Authority also considered archaeological sites, County historic districts, and historic sites in the heritage resources evaluation. Proximity to existing parkland, other public lands, and open space was also factored into the analysis.

This Countywide Green Infrastructure Map appears to be the Natural Resource Inventory, or at least the basis for it, that EQAC has been recommending. EQAC does not know how complete this map is, so EQAC cannot judge how completely its recommendations on Natural Resource Inventories are satisfied. EQAC will report on this in next year's annual report.

FCPA will also use this modeling tool for projects such as prioritizing acquisition areas based on relative natural and heritage resource importance, and evaluating impacts of land development proposals.

**c. Natural Resource Management Plan**

In past reports, EQAC recommended that the County Board of Supervisors develop and implement a Countywide Natural Resource Management Plan. EQAC noted that in order to do this, two tasks need to be accomplished first: complete a Countywide Baseline Natural Resource Inventory and adopt a unified Natural Resource Conservation Policy.

EQAC's past recommendation on developing a Countywide Natural Resource Management Plan is being partially fulfilled by FCPA. The FCPA staff has completed a draft of its Natural Resource Management Plan (NRMP). This draft is undergoing internal Park Authority review and is scheduled to be presented to the Park Authority for adoption in the fall. This plan identifies the countywide and Park Authority programs and data sources related to natural resources and analyzes Park Authority policies and the Park Comprehensive Plan provisions affecting natural resources. It addresses natural resources management and planning on parklands within the general issues categories of Vegetation, Wildlife, Stormwater Management and Erosion Control, and Human Impact. EQAC continues to recommend that this FCPA effort be expanded Countywide.

#### **d. Greenways Program**

Implementation of the Greenways Program began in 1997 with the Park Authority staff working with citizens groups participating in the Parks Round Table partnership. FCPA continues to pursue the acquisition of property within the greenways and stream valley trails programs. The targeted stream valleys are those of Accotink, Difficult Run, Pimmit Run, and Turkeycock Run. As is the case with Environmental Quality Corridors (EQCs), the ecological boundaries of Greenways may include both public and private open space. Under voluntary cooperative resource management agreements, the Park Authority could offer technical assistance for enhancing the Greenway benefits of private property. This could include the landowner voluntarily granting conservation easements. Conservation easements have been used successfully by groups such as the Nature Conservancy to protect environmentally sensitive lands, and the Nature Conservancy has found that many landowners support the goal of preserving these environmentally sensitive lands.

EQAC notes that the Greenways Program is valuable in that it can expand the protection of environmentally sensitive stream valleys. However, this program should be aggressively expanded through the use of obtaining conservation easements, where possible, on private properties. As noted above, the Nature Conservancy has been successful in this approach. Additionally, the Northern Virginia Conservation Trust (NVCT) is now over six years old and can acquire conservation easements. The Northern Virginia Conservation Trust has now obtained a number of easements in Northern Virginia, showing that this approach in Fairfax County is feasible. The Board of Supervisors should continue its

cooperation with NVCT and aggressively pursue easements aimed at protecting and preserving environmentally sensitive lands.

**e. Wildlife Conflict Resolution and Management**

Wildlife can cause adverse impacts, both in the County's parks as well as in residential neighborhoods. See elsewhere in this section for a discussion on deer. Beaver activity can also cause adverse impacts. Their activities in stream valley parks can cause excessive losses of mature trees due to flooding. Additionally, beavers will often go into residential neighborhoods for trees. The Park Authority, through its Wildlife Conflict Resolution Policy, is working to mitigate these adverse impacts.

FCPA continues to work to minimize the impact of Canada geese on park properties through humane non-lethal methods. FCPA is actively involved with GeesePeace Fairfax, the County Wildlife Biologist, the Department of Public Works and Environmental Services Facility Management Division, and others to reduce the conflict caused by an overabundance of non-migratory Canada geese in the County. Several golf courses have instituted controlled dog harassment programs, which prevents geese from establishing nests in the parks. The goose egg addling program is well established as a regular activity in many parks and will be expanded as warranted. Addling eggs (coating eggs less than 14 days old with corn oil) will stop the egg from maturing, yet the parent goose will not lay another egg since it is still trying to hatch the addled egg.

The FCPA is working at developing a database for tracking wildlife related complaints, reports, and questions. The database was recently modified so that the information it contains may be displayed on the County GIS system. This allows the display of beaver and other wildlife incident reports in map form. This ability to display both temporal and geographic information simultaneously will allow the determination of population trends and habitat preferences in the County.

**f. Invasive Plant Control Efforts**

Invasive plants are a problem because they can out compete and replace native species. This change in vegetation disrupts the life cycles of many flora and fauna that depend on native vegetation. Huntley Meadows Park received a grant (a \$39,200 matching grant) to be used for suppression and further research on *Microstigeum viminium*, also known as Japanese stilt grass, and *Berberis thunbergii*. This was the third year in an ongoing active management program at Huntley Meadows that is providing valuable information for use at other sites around the County. The agency is also striving to use native plant species, whenever possible, to stabilize disturbed areas around new trails and other construction sites.

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This 2001 project at Huntley Meadows was successful in eradicating *Microstigeum viminium* throughout the 262-acre project area. Additional funds are being sought to continue these control efforts.

## **2. Northern Virginia Regional Park Authority**

The Northern Virginia Regional Park Authority (NVRPA) is developing general management plans and natural resource management plans for their parklands in order to protect the important natural and cultural resources located in these parks. These plans include detailed inventories of these resources and suggest parameters for operation and development of the parks.

In 2001, NVRPA completed both a draft General Management Plan (GMP) and a Natural Resource Management Plan (NRMP) for the 1,003-acre Pohick Bay Regional Park. They are working on documents for Bull Run and Hemlock Overlook Regional Parks, and plan on developing plans for each park in the NVRPA system.

The GMP for the Pohick Bay Regional Park contains several appendices worthy of specific note. First is a Natural Resources Inventory and Existing Conditions Assessment Report. This Natural Resources Inventory is a good example of what EQAC has been recommending that should be done for all of Fairfax County. This inventory characterized soils, slopes, areas susceptible to erosion, wetlands, plant communities and species, wildlife habitat and species, invasive exotic plant species, and endangered and threatened species. The second appendix contains a Cultural Resources Inventory. Included in the inventory is a very interesting history of the lands that now constitute the park. The third appendix contains maps showing and locating the resources identified in the first two appendices.

The NRMP provides the strategic plan for managing the natural resources within the park. This plan takes into account the entire ecosystem and balances recreational use and conservation of resources so each is sustainable. The natural resources identified in the GMP are prioritized to allow better planning and management of these resources. Also, the prioritization shows where improvement, or monitoring of, existing conditions will protect those natural resources of significant value. However the NRMP also notes that the prioritization of natural areas does not mean some areas have little or no value. All natural systems serve a function in ecology and should be protected as possible.

## **3. Fairfax ReLeaf**

Fairfax ReLeaf is a non-profit, non-governmental organization of private volunteers who plant and preserve trees, restore habitat, and improve community appearance in Northern Virginia. They have testified to County officials and politicians that an unacceptably rapid rate of tree loss in Fairfax County continues. They state that the

County has not taken effective steps to stem this loss of forest infrastructure. They therefore advocate:

- (1) Conservation design of subdivisions and conservation clustering;
- (2) Smaller multipurpose utility swaths;
- (3) Maximum reforestation and tree preservation on Department of Public Works (DPW) easements;
- (4) Reconsideration of DPW tree destruction in and around stormwater structures;
- (5) Re-convening of County's Tree Preservation Task Force;
- (6) Tree preservation workshops for private-sector site engineers and planners;
- (7) Tree preservation and restoration as component of County's stormwater strategy;
- (8) Authentic consideration for tree preservation in County's planning and zoning special exception decisions;
- (9) Restoration of County's urban forestry branch to its former strength in site planning process; and
- (10) Redeployment of Park Authority's tree removal resources into tree preservation and planting.

#### **4. Northern Virginia Conservation Trust**

Past EQAC reports have recommended that the Fairfax County Board of Supervisors form public-private partnerships for the purpose of obtaining easements on environmentally sensitive land. EQAC pointed out that entities such as The Nature Conservancy uses easements very successfully as a way of protecting environmentally sensitive properties. With the signing of a Memorandum of Understanding on June 20, 2001 between the Fairfax County Board of Supervisors and the Northern Virginia Conservation Trust (NVCT), such a public-private partnership now exists.

The NVCT is an ideal partner for Fairfax County in the public-private partnership. Founded in 1994 as the Fairfax Land Preservation Trust, they changed their name in 1999 to The Northern Virginia Conservation Trust to better reflect the regional scope of their organization. They are a 501(c)(3) nonprofit land trust dedicated to preserving and enhancing the natural and historic resources of Northern Virginia. They also have formed public-private partnership Arlington County and own properties or easements in Arlington, Fairfax, Loudoun, Prince William, and Stafford Counties.

Under the Memorandum of Understanding, the Fairfax County Board of Supervisors provided an annual contribution of \$235,000 to NVCT and will include at least \$235,000, plus an inflation factor, in the next two years. (The Memorandum of Understanding is for three years, starting July 1, 2001.) The first year's funding will be used as follows:



- \$50,000 to the Land Fund to be used for costs directly related to the acquisition of easements, fee simple purchases, and/or options to purchase land in Fairfax County;
- \$65,000 to fund a land specialist within NVCT to work with targeted landowners in Fairfax County on easements and other conservation options;
- \$50,000 for Administrative/Management staff and materials directed at managing the NVCT conservation efforts in Fairfax County;
- \$50,000 for public outreach staff and materials directed at increasing the public's awareness of conservation options; and
- \$20,000 for the NVCT Land Stewardship Fund as an endowment to cover long-term monitoring and enforcement of perpetual easements.

Under the Memorandum of Understanding, NVCT will provide the following programs and services to Fairfax County residents:

1. Site Inventory: NVCT staff will use a variety of Fairfax County sources to identify sites:
  - Identify land in Fairfax County that is either vacant or underused, using GIS mapping information, to be targeted for easement donation or purchase;
  - Identify privately owned land that is of special habitat value or to protect the County's Environmental Quality Corridors, resulting in a host of environmental benefits such as tree and habitat preservation; and
  - Identify those historic sites listed on the County's Inventory of Historic Sites that could be appropriate for protection through an easement.
2. Coordination with the Fairfax County and Northern Virginia Regional Park Authorities: NVCT, working with County staff, will use GIS information and County databases to aid in site identification and public benefit determination. This information would be shared with the Fairfax County Park Authority (FCPA) and the Northern Virginia Regional Park Authority (NVRPA). Coordinating with these entities, NVCT will identify which of the targeted sites are beyond the current resources or the charter of the County or Regional Park Authorities to acquire in fee simple or by easement. Properties not targeted by either of the two Park Authorities will be tasked to the NVCT. As a result of this approach, any strategy to target properties that are adjacent to FCPA or NVRPA parkland would be closely coordinated with the appropriate park authority. In those instances where NVCT pursues easements on properties that adjoin parkland or serve park purposes, the appropriate park authority should be given first consideration for holding these easements as long as the property owner has no objections.
3. Public Benefit Determination: All conservation easements must have a public benefit to be eligible for federal and state tax benefits. To determine public benefit, any potential easement property must have at least two of the following attributes associated with its conservation. The first bullet below references

“protection of lands in furtherance of governmental plans or policies” which are embodied in the Policy Plan of the County’s Comprehensive Plan.

- Contributes to protection of lands in furtherance of governmental plans or policies;
- Contains endangered, threatened, or rare species;
- Contains relatively natural wildlife habitat, ecosystems, or natural features;
- Contains wetlands, floodplains, waterways, riparian corridors, aquifers recharge areas, watershed or other land necessary for protection of water supply, water resources or wetland habitat;
- Buffers natural areas, wetlands, wildlife habitats, or other sensitive areas;
- Provides connections to or between other protected or open space lands facilitating greenways;
- Has historic or archaeological value or is adjacent to and buffers such lands;
- Contains unique or outstanding physiographic characteristics;
- Offers geographical diversity to the easement program;
- Offers significant relief from urban closeness and/or helps define community form.

4. Securing the Easement: Once potential properties have been identified, owners of targeted properties will be contacted to determine if they have any interest in exploring conservation options. If they are receptive, the Trust’s staff will work with the property owners until the transaction is complete or negotiations end.

Since NVCT became eligible to receive easements in 1999, they have recorded 11 conservation easements and taken ownership of three properties in Fairfax County. These properties protected by NVCT add to the protected ecological resources of the County. (See Table III-2 for a listing of these properties.) The three properties owned by NVCT all have a significant stream connection. One is on Pimmit Run, another is on Little Hunting Creek, and the third is a forested buffer to Backlick Run. In May 2002, NVCT transferred the Backlick Run property to the FCPA to expand the stream valley park. Of the 11 conservation easements, four are contiguous to existing parkland, seven have streams or ponds on the property, and most of the properties under easement have significant areas of forest.

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<b>Table III-2</b> <b>Fairfax County Open Space Preserved Through NVCT Efforts</b>			
<b>Date</b>	<b>Name</b>	<b>Acres</b>	<b>Type</b>
December 1999	Haldane Easement	4.5	One easement
April 2000	Ruckstuhl Easement	7	Four easements
August 2000	Davenport/Pimmet Run	1	Fee simple ownership
December 2000	Narins Easement	5	One easement
December 2000	Bliss Easement	5.6	One easement
1 May 2001	Rare Oak Hickory Forest	385	Grant funds for acquisition
1 July 2001	Rentsch Easement	5	One easement
1 July 2001	Cobb Easement	12	One easement
1 August 2001	Thornton Easement	5	One easement
1 August 2001	Lindsay Easement	5	One easement
2 January 2002	Backlick Run	0.6	Fee simple ownership
2 March 2002	Little Hunting Creek	2	Fee simple ownership
<b>Total Fairfax County Land Preserved</b>		<b>437.7</b>	

Source: *Policy Plan Amendments to the Comprehensive Plan – Conservation Easement Program*, Letter From Paul Gilbert, NVCT President, to Environmental Committee of the Fairfax County Board of Supervisors, April 8, 2002.

During 2001, NVCT worked to enhance the environment and engage the public through conservation activities including tree plantings, invasive species removal, easement monitoring training, and a birding event. The tree plantings and invasive species removals are designed to enhance the wildlife habitat value of preserved lands.

When EQAC recommended the creation of a private-public partnership to record easements on environmentally sensitive land, EQAC also recommended an aggressive program to identify and record these easements. NVCT is starting such a program. In April 2002, NVCT sent out over 100 letters to landowners of vacant land with significant RPA along Little Hunting Creek. Earlier, NVCT did several mailings to all the private landowners along Accotink Creek. Hopefully, this will result in more easements and increased protection of sensitive property in these stream valleys.

EQAC encourages all landowners whose property contains environmentally sensitive land such as wetlands, stream valleys, and forests to consider contacting NVCT and learning more about easements. If these landowners grant an easement, they will not

only protect sensitive land, but can realize some financial benefits. A perpetual easement donation that provides public benefit by permanently protecting important natural, scenic and historic resources may qualify as a Federal tax-deductible charitable donation. Under the Virginia Land Conservation Act of 1999, qualifying perpetual easements donated after January 1, 2000, may enable the owner to use a portion of the value of that gift as a state income tax credit. Fairfax County real estate taxes could also be reduced if the easement lowers the market value of the property.

Additional information on NVCT can be found on their web site, <http://www.nvct.org>.

## **5. Northern Virginia Soil and Water Conservation District**

The Northern Virginia Soil and Water Conservation District (NVSWCD) continues to provide leadership in the area of bioengineering techniques in streambank stabilization and in the general area of erosion and stormwater control. The Kingstowne project was a restoration project using bioengineering techniques to restore and stabilize a severely degraded stream segment in the Dogue Creek watershed (in the Kingstowne area). The effort was lead by NVSWCD with the aid of Fairfax County agencies and two citizen groups (Friends of Huntley Meadows Park and Citizens Alliance to Save Huntley). The project was initiated in 1998. This project is now a showcase for successful restoration applying the principals of fluvial geomorphology and soil bioengineering. The result is a less erodable configuration using natural vegetation to stabilize the streambanks.

Maintenance needs for this project have been diminishing after grade control structures (rock cross vanes) were installed in the fall of 2000 by NVSWCD and the Department of Public Works and Environmental Services (DPWES). There were eight grade controls installed at the stream's slope, thereby reducing the high velocity in the stream and cutting down on erosion at the downstream end of the project. Specially selected stones were placed at eight locations inside the stream and tied in carefully to the bed and sides of the stream.

The new re-engineered 1,200 foot long channel has successfully carried several bank full storm runoff events. During 2001, the Kingstowne restoration project required practically no maintenance. The streambank and riparian vegetation has become well established.

As a result of this project, NVSWCD developed a brochure that describes the impact of increases in impervious surfaces on stormwater runoff, the concepts of fluvial geomorphology and soil bioengineering which were used to analyze and design the project, and the construction and implementation of the project. DPWES reprinted 500

copies of this brochure for the Greenways-Blueways Conference that was held in Arlington in September 2001.

A number of streambank protection and restoration projects are discussed later in this chapter. NVSWCD played, and continues to play, a pivotal role in the analysis and design of these projects.

## **6. Fairfax County Wetlands Board**

Staff reviewed approximately 40 Joint Permit Applications to determine if permits were required from the Wetlands Board during calendar year 2001. The Fairfax County Wetlands Board evaluated and approved three permit applications during the 2001-2002 fiscal year – one shoreline stabilization project, one community pier, and one tidal wetland expansion/enhancement.

The Office of Public Affairs worked with staff to develop a Wetlands Permitting information piece to explain the County's Wetland Permitting process. This information piece will be on the County's web site.

## **7. Metropolitan Washington Council of Governments**

The Metropolitan Washington Council of Governments (MWCOG) is planning a project in Fairfax County, Arlington County, and Alexandria in the Holmes and Tripps Run Watershed. This project is being done under a grant from the U. S. Geological Survey (USGS) and in partnership with Virginia Tech and USGS. The name of the project is the Urban Biodiversity Information Node: Holmes and Tripps Run Watershed Pilot.

The National Biological Information Infrastructure (NBII) <http://www.nbii.gov> is a broad, collaborative program to provide increased access to data and information on the nation's biological resources. The NBII links diverse, high-quality biological databases, information products, and analytical tools maintained by NBII partners and other contributors in government agencies, academic institutions, non-government organizations, and private industry.

MWCOG is a regional organization of Washington area local governments. MWCOG is composed of 17 local governments surrounding our nation's capital, plus area members of the Maryland and Virginia legislatures, the U.S. Senate, and the U.S. House of Representatives. Founded in 1957, MWCOG is an independent, nonprofit association supported by financial contributions from its participating local governments, federal and state grants and contracts, and donations from foundations and the private sector.

The Urban Biodiversity Information Node (UrBIN) will focus on the emerging information needs for managing watersheds in urban and urbanizing environments in Northern Virginia. This project, focusing initially on the Holmes and Tripps Run watershed, is part of a larger, long-term project with the USGS's NBII to examine the effects of urban and suburban growth upon biodiversity in the metropolitan Washington area. The objective of the overall project is to supply a variety of users of the NBII Urban Biodiversity Node with the information that is needed to make sound, environmentally responsible decisions. Data, tools, and best management practices will be made available and will enable communities to address issues such as sprawl, habitat fragmentation and loss, and water and air quality problems.

Researchers will investigate the Holmes and Tripps Run watersheds to:

- Synthesize urban watershed data into a geographic information system;
- Develop appropriate urban watershed assessment procedures;
- Determine the relationship of urban land use and biodiversity;
- Integrate urban biodiversity information into land use decisions; and
- Present research findings, assessment procedures, and watershed information in accessible formats to meet identified stakeholder needs and decision processes.

An additional benefit of this project will be additional information to incorporate into FCPA's Countywide Green Infrastructure Map.

## **8. Urban Forestry**

### **a. Urban Forestry Division**

In FY 2001, the Urban Forestry Division (UFD) continued to serve a unique and diverse set of customers. The Urban Forestry Division customer base includes citizens, builders, developers, planners, engineers, landscape architects, private arborists, and other County staff and agencies, including the Board of Supervisors (BOS), Planning Commission, Tree Commission, Environmental and Facilities Review Division (EFRD), Environmental and Facilities Inspections Division (EFID), Department of Planning and Zoning (DPZ), Office of Capital Facilities (OCF), and the School Board.

The following table (Table III-3) summarizes the workload of UFD based on the requests for assistance that were completed for 1999, 2000, and 2001. These figures demonstrate a slight decline in the requests for assistance in FY 2001.

A significant amount of staff time in 2001, however, was also dedicated to preparation of amendments to the Zoning Ordinance, Subdivision Ordinance, and Public Facilities Manual (PFM) relating to County tree cover requirements, and tree

and vegetation preservation and planting. The preparation of the amendments included ongoing workshops and meetings with County staff, citizens, and the development community. The Urban Forestry Division staff also provided presentations on the amendments to the Tree Preservation Task Force and Engineering Standards Review Committee, and obtained formal endorsement of the amendments from both groups. On December 3, 2001, the BOS authorized advertisement of the amendments for the public hearing. The amendments were approved by the Planning Commission on January 30, 2002, and received final approval by the BOS on February 11, 2002.

<b>Table III-3</b>			
<b>Urban Forestry Division Workload, 1999-2001</b>			
<b>Type of Assignment</b>	<b>Number of Completed Requests</b>		
	<b>1999</b>	<b>2000</b>	<b>2001</b>
Waivers	50	46	64
Zoning Cases	259	285	208
OSDS Requests (Plan Review and Site Inspections)	1,361	1,631	1,511
Other (BOS, FCPS, Other County Agencies, etc.)	485	563	559
Hazardous Trees	78	61	25
<b>Total Complete</b>	<b>2,233</b>	<b>2,586</b>	<b>2,367</b>

Source: Fairfax County Department of Public Works and Environmental Services

In response to a request by the BOS, staff examined strategies to encourage the use of desirable tree species during the development process in the County. The response to the BOS included several recommendations. The recommendation to provide additional tree canopy credit for the use of desirable tree species was incorporated into the amendments to Section 12 of the PFM, "Vegetation Preservation and Planting." The recommendation to propose new, or amend existing state enabling legislation was reflected in proposed language changes to Virginia State Code § 15.2-961 (see enabling legislation discussion below).

The Urban Forestry Division staff provided training to Virginia Tech forestry, urban forestry, and landscape students, as invited class instructors. Training was also provided to other County employees, including classes on tree preservation and tree planting to the DPZ. Staff continued to provide training to new inspectors in EFID on County Code requirements for vegetation preservation and planting. Additionally, staff presented a paper on "Tree Preservation in Development" at the Mid-Atlantic Chapter of the International Society of Arboriculture annual meeting.

#### b. Gypsy Moth Program

The Gypsy Moth Program came under the supervision of the Urban Forestry Branch Chief in December 1996. This program contains eight positions. In June 1997, the Gypsy Moth Program office moved from the Government Center building to the Herrity Building.

The gypsy moth was first detected in Fairfax County in 1981. The Board of Supervisors enacted an Integrated Pest Management (IPM) Program to control the gypsy moth, *i.e.*, reduce gypsy moth populations below defoliating levels. The goal of the program is to minimize the environmental and economic impacts of the pest by limiting the amount of tree mortality and use of pesticides in the environment. Each year, the following control methods are considered:

- **Mechanical:** The gypsy moth egg mass Search, Scrape, and Destroy Campaign and Burlap Banding for Gypsy Moth Caterpillars. These are citizen involvement programs.
- **Biological:** Release and monitoring of gypsy moth parasites and pathogens, and aerial and ground applications of *Bacillus Thuringiensis* (*Bt*).
- **Chemical:** Aerial and ground applications of Diflubenzuron on high infestations.
- **Educational:** Self-help program and lectures to civic associations and other groups.

In 2001, gypsy moth caterpillar populations increased significantly compared to the previous five years. At this time, it can not be determined whether this increase is a sign that populations will reach outbreak proportions in the near future, or if the populations will stay at moderate levels.

Egg mass surveys conducted by County staff in the fall of 2001 indicated that 5,500 acres in 29 areas of the County had gypsy moth infestations that warranted aerial treatment in the spring of 2002. Most of the treatment areas were located north of Route 66; however, populations were found in some southern areas of the County.



In addition to the aerial treatment areas, there were 90 acres in isolated areas that warranted ground treatment. The pesticide used for these treatments was *Bacillus Thuringiensis* (Bt), a material registered with the Environmental Protection Agency for use against the gypsy moth caterpillar in forested, residential communities.

Gypsy moth populations have increased in Virginia and the northeast. There was no detected defoliation by the gypsy moth in Fairfax County in 2001; however, the Virginia Department of Agriculture and Consumer Affairs reported 440,409 acres of defoliation elsewhere in Virginia.

Experts agree that the reason for the current population increase is due to the lack of the fungus *Entomophaga maimaiga*. The fungus was introduced from Japan and can now be found throughout the eastern United States where gypsy moth infestations exist. After a period heavy rain, caterpillars come in contact with the spores of this fungus, are quickly infected, and eventually die. Record low rainfalls for the spring of 2001 and 2002 will probably have an effect of increasing gypsy moth populations since levels of the fungal pathogen will be low. Information concerning the biology of this fungus can be found in previous *Annual Reports on the Environment* or by contacting the Gypsy Moth Program Office.

In addition to the measures being taken by the County, citizens can help in the fight against the gypsy moth. Citizens are encouraged to destroy egg masses and caterpillars found on their properties. Banding trees with burlap strips can trap the caterpillars. Scraping the masses into a container of soapy water can destroy egg masses.

#### **c. Fall Cankerworm**

The fall cankerworm, *Alsophila pomataria*, is a defoliating insect found throughout much of North America. This insect is native to the United States and feeds on a broader range of trees than the gypsy moth. The caterpillar stage of this insect, often referred to as inchworms or loopers, feeds in the spring and will feed on a wide variety of trees, but tends to prefer maples, hickories, ash, and oak -- all of which are found in abundance throughout Fairfax County. The fall cankerworm caterpillars, the only life stage of this insect that causes damage to trees, emerge in early spring about the time of bud break and begin feeding almost immediately. Feeding continues throughout much of the spring until the mature caterpillars drop off the tree, enter the soil, and pupate.

Low level cankerworm infestations can cause nuisance problems due to the number of caterpillars and their droppings. With more severe infestations, defoliation can occur resulting in stress to the trees and possible tree mortality. As in severe gypsy moth infestations, cankerworm infestations tend to be a severe nuisance to homeowners, making yards and patios unusable for several weeks in the spring. Outbreak phases usually last two or three years in succession and then decrease due

to disease, perdition, and parasitism. In some instances; however, populations do not decline and some type of control may be warranted. According to experts from the United States Forest Service, this insect thrives in older, mature forest stands that are under stress from external sources. Many older, suburban neighborhoods throughout the County, like those found in Mount Vernon and Lee Districts that are already infested, have this type of forest cover and are suitable locations for sustained outbreaks of the fall cankerworm.

The Forest Pest Program conducted a large aerial treatment program during the spring of 2000. County staff have monitored for adult female moths throughout the Mount Vernon and Lee Districts in January of 2001 and 2002. Results of these monitoring efforts indicated that the 2000 treatment program was very effective. During the spring of 2002, ground spraying of approximately 75 acres was conducted by contracted staff.

The Forest Pest Program will monitor for fall cankerworm again this winter. They expect that the populations of this pest will be low in the near future.

**d. Tree Preservation Task Force**

The Tree Preservation Task Force activities for the calendar year 2001 primarily focused on completion of the proposed amendments to the County Code relating to tree cover, and tree preservation and planting requirements. In May 2001, the Tree Preservation Task Force endorsed the amendments package.

In 2002, the Tree Preservation Task Force will continue to monitor the implementation recommendations that are still in progress. It will also continue to review County policy and procedures that effect tree preservation during the development of public and private property. The Preservation Task Force will convene in the spring of 2002 to review the progress of the S.B. 484, which was submitted by Fairfax County as part of its 2002 Legislative Program (see Summary of Tree Commission activities). The Tree Preservation Task Force may elect to arrange and participate in a meeting with the legislative patrons, and the Virginia Building Association in order to encourage a dialogue focused on the core issues of the proposed legislation.

**e. Tree Commission Activities and Issues in 2001**

In 2001, the Tree Commission proposed amendments to the Virginia State Code § 15.2-961 that relate to tree canopy requirements on development sites. The proposed amendments would change the core concept of this section from tree replacement to tree conservation, with a strong emphasis on tree preservation. The proposed changes would also enable the County to regulate the use of native and other desirable trees to meet tree cover requirements. These proposed changes became the basis for the County's proposed amendments to Code § 15.2

**f. Summary of Proposed/Anticipated Changes to Tree Preservation Enabling Legislation**

In reaction to the limited tree preservation authority provided by the Code, and recommendations by the Tree Preservation Task Force, Fairfax County initiated a proposal to amend the Virginia State Code § 15.2-96 1, as part of its 2002 strong emphasis on tree preservation. Both bills were introduced in the 2002 Virginia State Legislative Assembly, but were tabled until the 2003 session due to opposition by the Virginia Building Association.

**g. Status of Grant Proposal for Satellite Mapping of the County's Tree Cover and Analysis of Tree Cover Data**

With the technical support of the Geographic Information Services Branch, of the Department of Information Technology, UFD has completed a countywide tree cover analysis, using year 2000 10-meter per pixel SPOT satellite imagery. The analysis demonstrates that in year 2000 approximately 50% of Fairfax County's 235,000 acres was covered with tree canopy. A comparison of the year 2000 analysis with tree cover levels derived from 1995 SPOT imagery reveals that the countywide tree cover has not changed significantly in the past five years. Comparison of the images demonstrates that relatively large tracts of native forest were removed during land development. However, the canopy of trees that were planted in new developments and established neighborhoods expanded, offsetting the lost of native tree canopy. In addition to the years 1995 and 2000, UFD will analyze satellite imagery from 1990 to detect the total rate of canopy change from 1990 to 2000.

It should be noted that tree cover change-detection studies through satellite imagery (remote sensing) only provide a two-dimension model of the extents of countywide tree cover. These studies do not provide data relative to the three-dimensional structure, biomass, leaf surface area, health or bio-diversity of the countywide tree cover. While comparison of the two-dimensional tree cover analyses shows little change to the total countywide tree cover level from 1995 to 2000, ground-level survey data will need to be collected and analyzed before a full impact assessment can be made regarding the effects of the rapid urbanization of the last decade on Fairfax County's urban forests. The change detection data from 1990, 1995 and 2000 will be further broken down into 30 major watersheds in Fairfax County, and 37 other watersheds in Prince William County, Arlington County, and the City of Alexandria.

UFD is currently working to develop a countywide map for use as a layer on the County's geographic information system that will delineate the distribution of naturally occurring and landscaped vegetation, as it exists in 2002, using the

National Vegetation Classification System (NVCS). This classification system was originally developed by the Nature Conservancy and has been adapted by the United States Federal Standard Geographic Data Committee as the Federal Government Standard FGDC-STD-005, 1997.

This classification system will be used to map the entire county into areas that are currently populated with native tree, shrub, and herbaceous plant species, as these species group into larger associations, or plant communities. These communities usually coincide with distinct environmental gradients and are dependent on the presence of specific abiotic factors, such as elevation, climate, geologic substrate, and soil and hydraulic regimes.

The following is an example of how NVCS would be used to classify a forest alliance that could be found in the Mount Vernon or Lee District area:

Sweet gum, red maple, willow oak and swamp doghobble, forms a plant community that is associated with the seasonally flooded forest of shallow basins and depressions of the Coastal Plain of the Chesapeake Bay region. The substrate is characterized by mineral soils, generally acidic, gleyed or mottled, sandy or clay loams. Characteristic tree species include *Acer rubrum*, *Liquidambar styraciflua*, and to lesser degree *Nyssa sylvatica*. Associate plants include *Ilex opaca*, *Magnolia virginiana*, *Sassafras albidum*, *Quercus palustris*, and *Quercus phellos*. The shrub layer is populated by *Leucothoe racemosa*, *Vaccinium corymbosum*, *Clethra alnifolia*, and *Rhododendron viscosum*. *Smilax rotundifolia* is a characteristic vine. The herbaceous layer is normally sparse but may include *Mitchella repens*, *Osmunda cinnamomea*, *Woodwardia areolata*, and *Polygonum* spp.

Table III-4 shows how various hierarchical levels of the NVCS apply to this plant community, which is commonly known as the Sweet gum swamp forest:

<b>Table III-4</b>	
<b>NVCS Hierarchical Levels, Sweet Gum Swamp Forest</b>	
<b>Ecological System</b>	Terrestrial
<b>Formation Class</b>	I - Forest
<b>Formation Subclass</b>	I.B. – Deciduous forest
<b>Formation Name</b>	I.B.2.N.e – Seasonally flooded cold-deciduous forest
<b>Plant Association or Alliance Name</b>	I.B.2.N.e.6 - LIQUIDAMBAR STYRACIFLUA - (ACER RUBRUM) SEASONALLY FLOODED

FOREST ALLIANCE
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Source: Fairfax County Department of Public Works and Environmental Services

UFD will use the gradient-oriented transect (Gradsect) sampling methodology to determine the location and total number of ground survey plots that will be used as base information for the countywide NVCS map. The data from these surveys will be used in an attempt to correlate the presence of known plant communities to their specific reflective signatures found in high-resolution multi-spectral satellite imagery. If this process is successful, then the correlation of the vegetation signatures to geo-reference data in the satellite images will help automate the mapping process.

Once the entire landmass of Fairfax County is mapped using this system, a vegetation map will be produced for each of the 30 major watersheds. This data should provide a valuable benchmark that can be used to formulate and evaluate the effectiveness of countywide vegetation and ecosystem management policies. The vegetation-mapping project is expected to be complete by August of 2003.

#### **h. Summary of the Recent Amendment to the Chesapeake Bay Preservation Ordinance**

On February 25, 2002, the Fairfax County Board of Supervisors adopted an amendment to the Chesapeake Bay Preservation Ordinance (Chapter 118 of the *Fairfax County Code*) to address issues related to violations and penalties, restoration of Chesapeake Bay Preservation Areas, and removal of indigenous vegetation from Resource Protection Areas (RPAs). The amendment:

- Clarified what is permitted under provisions of the Ordinance that permit the removal of indigenous vegetation from RPA buffers for the creation of sight lines, access paths, general woodlot management, habitat management, and shoreline erosion practices;
- Required that a plan be submitted to DPWES for review and approval prior to the removal of indigenous vegetation from the RPA buffer to create a sight line or vista;
- Incorporated planting requirements for the establishment of RPA buffers;
- Limited the widths of boardwalks, pathways, and paved paths serving individual residential properties to four feet (except as necessary for handicapped access) in RPAs; and
- Added a new section addressing violations and penalties that, among other things, increased criminal penalties for violations of the Ordinance from Class 2

misdemeanors to Class 1 misdemeanors and provided for a civil penalty of up to \$5,000 for each day of violation (or a one-time payment of civil charges not to exceed \$10,000 for each violation).

**i. Status of Actions to be Taken to Comply with the Revised Chesapeake Bay Preservation Area Designation and Management Regulations**

The Chesapeake Bay Local Assistance Board amended its Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20 et seq.) on December 10, 2001. Jurisdictions have been given until March, 2003 to incorporate the new requirements of the Regulations into local ordinances. Amendments to the County's Chesapeake Bay Preservation Ordinance, Erosion and Sedimentation Control Ordinance, Subdivision Ordinance, Zoning Ordinance, and Public Facilities Manual will be necessary. Once the County has amended its ordinances, the Chesapeake Bay Local Assistance Department (CBLAD) will review the ordinances for consistency with the amended state Regulations.

The major changes to the Regulations include:

- RPAs must be designated around all perennial streams. It is anticipated that this will result in a significant increase in the extent of RPAs. The Regulations require that a site-specific determination of perennial stream flow, based on in-field indicators, be provided at the time of plan submission and a delineation of the RPA be performed as necessary. DPWES is currently performing field studies to identify perennial streams throughout the County. These field studies will ultimately satisfy the requirement to determine the location of perennial streams. This effort will be completed in 2003. Field studies for approximately 60% of the County will be completed this year. Following completion of the field studies, an updated set of RPA guidance maps will be available in late 2003. An interim procedure may need to be implemented to address identification of perennial streams for development projects for the period between the effective date of the amendments in March 2003, and the completion of the mapping project.
- The provisions allowing encroachment into RPAs for non-permitted uses have been revised substantially to require, for certain types of exception requests, that: (1) a public hearing be held; (2) adjoining property owners be notified; and (3) a committee designated by the Board must review and approve these exceptions. The composition of the hearing board is not specified in the amended Regulations. The amended Regulations also include specific criteria for evaluation of exception requests that will probably make it more difficult to obtain exceptions. The greatest impact of these changes will be on exception requests for: (1) loss of buildable area for new homes on lots created prior to the adoption of the local ordinance; and (2) accessory structures on lots created prior to the adoption of the local ordinance. Where exception requests for loss

of buildable area propose encroachment within 50 feet of perennial streams and contiguous wetlands, they will be subject to a public hearing requirement. All exception requests for accessory structures that propose encroachment in the RPA will be subject to the public hearing requirement. Administrative exceptions will continue to be allowed for other exception requests for loss of buildable area and for exception requests for additions to principal structures in existence prior to the adoption of the local ordinance.

Staff briefed the Board of Supervisors Development Process Committee on March 25, 2002 regarding changes that will be required in order to be in compliance with the amendments to the Regulations. Changes will be required to the Chesapeake Bay Preservation Ordinance, Subdivision Ordinance, Zoning Ordinance and the Public Facilities Manual. Staff is drafting the proposed amendments, for the Board of Supervisor's consideration, with the proposed schedule for amendments to these County ordinances as follows:

- October 2002 - authorization to advertise
- November/December 2002 - Planning Commission public hearing
- January 2003 - Board of Supervisors public hearing
- February 2003 - adoption
- March 1, 2003 - effective date

## 9. Riparian Projects

Stream bank erosion is a natural process that begins with water movement from uplands. In areas of urban development, impervious (watertight) surfaces replace vegetative soil coverings, resulting in less water soaking into the ground. As a result, more runoff flowing over land surfaces enters streams causing excessive stream bank erosion.

Serious undercutting and sloughing of stream banks can occur when stream banks are not adequately protected by riparian vegetation. This stream bank erosion impacts water quality, causing serious problems for fish and wildlife as well as downstream landowners and communities. Thus water quality and the flora and fauna associated with a healthy stream are closely linked. (See Chapter I, *Water Resources*, for more comments on water quality and stormwater management.)

Many methods exist to stabilize a stream bank. Traditionally, hard structures such as concrete and stone have been the quick fix. These methods may slow down the erosion process but are costly, unattractive, and environmentally objectionable. Today, many engineers and contractors rely on *bioengineering* techniques, which involve the use of living plant materials to stabilize and rebuild soils and vegetation.

Some bioengineering techniques include:

**Vegetation** -- The stability of a stream bank depends on the establishment of permanent vegetation that can withstand water inundation as well as dry conditions. Live cuttings from willows, dogwoods, and other species that root quickly are incorporated into the soil. Root mass keeps soil in place, and the flexible leaves and branches slow down the flow of water.

**Tree revetments** -- Large whole trees anchored lengthwise along eroding banks with their bottom ends upstream and overlapping one another may provide continuous protection to the bank.

**Biologs** -- Biodegradable logs made of processed coconut husk fiber called "coir" can hold soils and plants in place. A biolog is generally eight to ten feet long and about one foot in diameter. The material is tough, flexible, and absorbent. By the time the "log" biodegrades in seven or eight years, a root network of plants has been established through and behind it.

With such innovative bioengineering techniques and proper planning and design, we can restore stream banks, reduce the amount of pollutants and sediment going into streams, improve animal and fish habitat, and create a more aesthetically pleasing environment.

A number of agencies are participating in projects using bioengineering techniques to protect and restore stream valleys. The Fairfax County Park Authority started several projects in 2001 that will affect the biological health of the County's streams.

- The first project to enter the design phase is a reconstruction of the old farm pond at Mason District Park. This project will replace the existing dam, install a new outlet structure, regrade the pond basin and surrounding area, install an overlook at the pond edge, and create a wetland area with boardwalk access. This should control many of the smaller storm events that are currently causing erosion and degradation of the downstream reaches of Turkeycock Run.
- The Park Authority is partnering with VDOT to allow bioengineering restoration-stabilization of approximately 1,500 feet of Turkeycock below the Mason District Park farm pond. This will compensate for impacts associated with the Springfield Interchange project. Restoration will likely begin in late 2003. (VDOT has indicated that they would welcome more opportunities to partner with County agencies on future bioengineering projects.)
- FCPA is undertaking the retrofit of a DPWES storm water management facility upstream from the pond at Hidden Pond Park. Staff is hoping to include



reconstruction of a sediment-filled forebay into an educational wetland and sediment trapping facility.

- Huntley Meadows Park has been affected by erosion resulting from increased runoff due to upstream development for a number of years. Sediments are carried into the park's wetlands, reducing water depth and adversely affecting aquatic life. The Park Authority is working with DPWES on a park bond project in Barnyard Run to use mainly bioengineering stabilization practices to prevent further channel erosion and restore upstream reaches to a healthy condition. The Northern Virginia Soil and Conservation District is providing significant assistance in the design of this project.

The Virginia Department of Forestry (VDOF) has provided forestry related services in Fairfax County for over 30 years. They are also participating in several efforts aimed at improving riparian zones and stream bank stabilization projects.

- VDOF partnered with volunteers from the Chesapeake Bay Foundation, Difficult Run Community Conservancy, Potomac Conservancy, Fairfax County 4-H Clubs, and Nextel Corporation to plant 1,700 seedlings in riparian zones located in stream valleys. The sites of the plantings were Ellanor C. Lawrence Park, Frying Pan Park, Colvin Run Stream Valley Park, and Riverbend Park.
- VDOF sponsored two stream bank stabilization projects. These became joint projects with the Fairfax County Department of Public Works and Environmental Services Stormwater Maintenance Division and the Northern Virginia Soil and Water Conservation District. The projects took place in Wolf Trap Run and Accotink Creek watersheds as follows:
  - o In February 2001, NVSWCD, VDOF, and DPWES jointly designed and implemented a stream stabilization project on a 150-foot segment of Wolftrap Run at Cinnamon Creek. The eroded stream bank was threatening a heavily used trail and allowing a huge amount of sediment to flow downstream. The vertical bank was regraded to allow the stream to take advantage of the floodplain during large storms. To protect the stabilized bank, the bottom of the bank was lined with biologs. A flow deflector was built to divert the blow from the bank into the center of the stream.
  - o In the fall of 2001, VDOF and NVSWCD held an intensive three-day workshop on streambank stabilization and stream classification, measurement, and restoration at Lake Accotink Park. The site for the field demonstration was a stretch of Accotink Creek below the dam of Lake Accotink. Several bioengineering techniques were demonstrated to protect the banks and improve habitat including biodegradable logs and erosion control matting, shrubs, live stakes and cedar revetments. In

addition, the group learned about structural practices including a-jacks, and rock cross vanes. DPWES and FCPA assisted in the stream work, including providing heavy equipment to regrade the banks of the stream and lift large rocks for the cross vane. (The cross vane structure extends from bank to bank and concentrates the flow in the middle of the stream.)

## 10. Gunston Cove Ecological Study

Gunston Cove is a tidal freshwater embayment of the Potomac River located approximately 20 miles south of Washington, DC. The Cove is formed by the juncture of Pohick Bay and Accotink Bay, though which the waters of Pohick Creek and Accotink Creek flow to the Potomac River.

An ecological study of Gunston Cove, conducted by the Departments of Environmental Science and Policy, and Biology at George Mason University and supported by the Department of Public Works and Environmental Services, continued during 2000. This study is a continuation of work originated in 1984 at the request of the County's Environmental Quality Advisory Council and the Department of Public Works. This on-going monitoring program was established to determine impacts from local point sources and nonpoint sources and evaluate the status of the Gunston Cove ecosystem. Information from this study is intended to form the basis for well-grounded management strategies for maintenance and improvement of water quality and biotic resources in the tidal Potomac.

The executive summary of the 2000 report by Jones and Kelso summarizes details from their report and covers water quality, phytoplankton biomass, zooplankton, fish larvae and fish, and benthic organisms. The following paragraphs are extracted from this summary.

Chlorophyll a concentrations were typical of recent years with cove values exceeding 100 µg/L during much of the summer and river concentrations being generally below 40 µg/L with some higher peaks. Total photosynthetic rate was consistent with the chlorophyll pattern, but photosynthesis per unit chlorophyll was generally slightly higher in the river. Phytoplankton cell density was very high in late summer, principally due to cyanobacterial cells less than 2 µm in diameter. Biovolume, on the other hand, peaked in mid July in both cove and river. *Merismopedia* was the most numerous cyanobacterium in the cove while *aphanocapsa* was dominant in the river. Diatoms dominated phytoplankton biovolume in the cove through midsummer following which cyanobacteria became dominant. The filamentous centric diatom, *Melosira*, was the most important diatom as in most recent years. *Oscillatoria* was the most abundant cyanobacterium in the late summer and fall. In the river diatoms dominated throughout the year with *Melosira* somewhat less dominant than in the cove.

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The large pennate diatom *Surirella* was found in substantial numbers for the first time in late June in the river.

The rotifer assemblage demonstrated its usual late summer peak with much higher levels in the cove than in the river. *Brachionus* was the overwhelming dominant in the cove with a more mixed assemblage including Conochilidae and *Keratella* in the river. *Bosmina* was found throughout the year with the highest peak in the river. *Diaphanosoma*, on the other hand, exhibited a strong peak in abundance during a restricted period in June and July with somewhat higher levels in the cove, a typical pattern for this larger cladoceran. Other cladocerans also exhibited short periods of increased abundance, normally in the spring. Copepod nauplii were present at relatively high levels throughout the year with the highest densities observed in the summer in the river. While most copepods were present throughout the year, late summer was generally a low point. *Eurytemora* exhibited peaks in early spring and late fall and winter. *Diaptomus* was abundant in spring and early summer. Other calanoids were most abundant in late fall and winter. Cyclopoids were very abundant in 2000 in the river in summer.

Clupeid larvae were more abundant than any other species or other taxon. They were probably *Alosa* sp. (blueback herring or alewife).

White perch made up almost 80% of the catch in trawl samples. The seine catches showed more equitability among species, with four species being abundant. Inland silverside was the most common, but white perch, banded killifish, and spottail shiner were also numerous.

As in most previous years, oligochates were the most numerous benthic organisms with chironomids also important. Several other taxa including amphipods, isopods, snails, and bivalves were found in the river, but not in the cove. One of the bivalves was a native unionid, *Leptodea ochracea*, found for the first time in the George Mason studies of the Gunston Cove area.

The report by Jones and Kelso also exams the data to see what insights can be gleamed into the behavior of the Gunston Cove system and the effects of management activities. Some interesting trends over the period of the study can be seen. Their analysis is extracted and summarized below.

First, in Gunston Cove there was a clear pattern of increase in chlorophyll, a measure of phytoplankton biomass, from 1984 through 1988, followed by a decline through 1997. The same pattern was observed in biochemical oxygen demand (BOD), total phosphorus, and organic nitrogen. Phosphorus loading from the Norman M. Cole, Jr. Pollution Control Plant was greatly curtailed in the early 1980's. The observed pattern in phytoplankton biomass in the cove can be directly tied to the management action to decreased phosphorus loadings if we assume temporary storage of phosphorus during the pre-decrease period which continued to be released in significant amounts for

several subsequent years until largely exhausted or covered by 1989. In addition to the decrease in phytoplankton biomass observed during the 1990's, large scale *Microcystis* blooms disappeared and diatoms, a preferred food source for larger herbivorous zooplankton like cladocera, increased in importance.

Second, there were significant changes in other water quality variables. Chlorine was eliminated from the Norman M. Cole, Jr. Pollution Control Plant discharges in the mid-1980s, removing a major factor inhibiting fish movement in Pohick Creek. Ammonia nitrogen in the cove increased from 1983 through 1989 after which a clear decline was observed through 1995. This has helped to decrease the possibility of un-ionized ammonia toxicity in Pohick Bay.

Third, zooplankton have generally increased in the cove over the 11-year period of consistent data. Since zooplankton are an important link in the food chain between primary production and fish, this suggests a strengthened food chain.

"Fourth, the total catch of fish collected by trawling in the cove has generally declined since the mid-1980's, mainly due to the decline of blueback herring, alewife, gizzard shad, bay anchovy, and the brown bullhead. White perch has remained consistent and strong in the trawl samples."

"Fifth, the total fish collected per seine in the cove has shown little net change, although a dip was observed in the mid-1990's. However, there has been a major change from strong dominance by white perch in the early period to shared dominance by white perch and banded killifish in recent years."

"Sixth, the anadromous catch has increased partially due to increased frequency of sampling. The recent dramatic increase in alewife catches is well beyond that explained by increased sampling effort and reflects a major increase in anadromous fish usage of Pohick and Accotink Creeks."

The report notes some potential linkages between these patterns. The link between phosphorus and phytoplankton seems strong. Thus the decreased biomass and shift to diatoms in phytoplankton populations and the general increase in zooplankton. The consistent performance of white perch is consistent with the cove being a supportive environment, but the reason for decline in other fish taxa is unclear. The increase of banded killifish may simply reflect an increase in habitat as submersed aquatic vegetation (SAV) has gradually increased in the cove.

The annual reports by George Mason University are proving to be very useful in tracking changes in Gunston Cove as a result of changes at the Pollution Control Plant. These changes at the plant have benefited the Cove. The studies should continue so as to get a better idea of long term trends (as thus see the impact of changes at the Pollution Control Plant and other changes that may impact the Cove such as changes in land use in the watershed).

## 11. Agricultural and Forestal Districts

Landowners may apply to place their land in special Agricultural and Forestal (A&F) Districts that are taxed at reduced rates. A&F Districts, which are created by the Commonwealth of Virginia, must have 200 or more acres. A&F Districts of local significance, governed by the Fairfax County A&F District ordinance, must have at least 20 acres and must be kept in this status for a minimum of eight years.

Fairfax County's policy is to conserve and protect and to encourage the development and improvement of its important agricultural and forest lands for the production of food and other agricultural and forest products. It is also Fairfax County policy to conserve and protect agricultural and forest lands as valued natural and ecological resources that provide essential open spaces for clean air sheds, watershed protection, wildlife habitat, aesthetic quality, and other environmental purposes. The purpose of the Local Agricultural and Forestal District program is to provide a means by which Fairfax County may protect and enhance agricultural and forest lands of local significance as a viable segment of the Fairfax County economy and as an important economic and environmental resource.

Currently, 46 Local and Statewide A&F Districts exist in Fairfax County, containing a total of about 4,095 acres. Table III-5 shows the number and sizes of these A&F Districts. This is an increase of one A&F District in 2001, but a decrease of about 116 acres in this year. This is due to the following:

- Sully: Loss of one Statewide A&F District due to the expiration of the Sappington District on September 16, 2001 (loss of 324.34 acres)
- Dranesville: Gain of two Local A&F Districts, through the creation of one new district, the Potomac Vegetable Farm II District, and the redistricting of one existing district, the Moutoux Orchard District, previously Hunter Mill (gain of 74.65 acres)
- Springfield: Gain of one Local A&F District through the creation of the Kincheloe II District (gain of 176.5 acres)
- Hunter Mill: Loss of one Local A&F District due to the redistricting of the Moutoux Orchard District to Dransville (loss of 43.34 acres)

Before 1983, two Statewide A&F Districts existed containing about 1,260 acres (Mason Neck Statewide A&F District and Potowmack Farm Statewide A&F District). In 1983, local legislation governing Local A&F Districts became effective. Since then about 4,395 acres have been added to the program and about 1,560 acres deleted for a net increase of 2,835 acres. The change in acreage for each year since 1983 is shown in Table III-6.

As can be seen in Table III-5, only four of Fairfax County's Magisterial Districts now contain A&F Districts – Mt. Vernon, Springfield, Dranesville, and Sully. The land in

these A&F Districts contains about 4,095 acres – under two percent of the land in Fairfax County. Mt. Vernon contains the largest acreage of the A&F Districts (about 35%), but this will likely change in 2003. The land comprising the Mason Neck Statewide A&F District was involved in a land swap in 2001. The majority of the acreage in this district (about 804 acres of the total 946 acres) was transferred to the Bureau of Land Management, United States Government. While transfer of ownership does not automatically remove a district from the program, the Mason Neck Statewide A&F District is scheduled to expire on January 12, 2003. At that time, it will likely be removed from the program.

<b>Table III-5</b> <b>Number and Sizes of Agricultural and Forestal Districts</b> <b>in Fairfax County</b>						
<b>Magisterial District</b>	<b>Local A&amp;F Districts</b>		<b>Statewide A&amp;F Districts</b>		<b>Total A&amp;F Districts</b>	
	<b>No.</b>	<b>Size (Acres)</b>	<b>No.</b>	<b>Size (Acres)</b>	<b>No.</b>	<b>Size (Acres)</b>
Braddock	0	0	0	0	0	0
Hunter Mill	0	0	0	0	0	0
Dranesville	19	631.92	1	470.99	20	1,102.91
Lee	0	0	0	0	0	0
Mason	0	0	0	0	0	0
Mt. Vernon	3	188.14	2	1,233.45	5	1,421.59
Providence	0	0	0	0	0	0
Springfield	17	1,111.74	0	0	17	1,111.74
Sully	3	185.52	1	273.37	4	458.89
<b>Total</b>	<b>42</b>	<b>2,117.32</b>	<b>4</b>	<b>1,977.81</b>	<b>46</b>	<b>4,095.13</b>

Source: County 2001 Agricultural & Forestal District Annual Statistical Report, Zoning E

## 12. South Van Dorn Street Phase III Road Project

The U.S. Army Corps of Engineers issued a permit for the construction of South Van Dorn Phase III on May 28, 1996. Conditions contained in the permit require that no construction can start on the roadway until four conditions are completed. Three of these conditions are aimed at protecting Huntley Meadows Park. One condition is that seven parcels of land (102 acres) adjacent to Huntley Meadows Park must be purchased by Fairfax County. This is in lieu of creating wetlands for the five acres of wetlands that will be destroyed in road construction. These 102 acres contain about 69 acres of wetlands and 33 acres of uplands. This action will ensure preservation of the wetlands contained in this 102-acre tract as well as provide a valuable addition to Huntley Meadows Park.

The County now has possession of these seven parcels of land and they will be turned over the FCPA to become part of Huntley Meadows Park. The Corps also required that this land remain natural (as is the rest of Huntley Meadows Park). Unfortunately, some of the land has been mowed. While this land will revert to woodlands if left unmowed, the process can be accelerated by tree planting. An Eagle Scout project is underway to do that in the fall of 2002, using vegetation native to the area. The scout leading this effort will coordinate with Fairfax ReLeaf, Friends of Huntley Meadows Park, Huntley

<b>Table III-6</b>			
<b>Changes in Acreage Incorporated in A&amp;F Districts</b>			
<b>Year</b>	<b>Acres Deleted</b>	<b>Acres Added</b>	<b>Net Change (Acres)</b>
Pre-1983	0	1,261.36	+1,261.36
1983	0	425.69	+425.69
1984	0	662.41	+662.41
1985	0	169.99	+169.99
1986	55.00	165.76	+110.76
1987	0	0	0
1988	159.78	186.19	+26.41
1989	72.22	459.33	+387.11
1990	100.00	261.77	+161.77
1991	0	631.50	+631.50
1992	287.65	262.60	-25.05
1993	36.17	603.52	+567.35
1994	61.89	33.14	-28.75
1995	0	0	0
1996	36.89	59.18	+22.29
1997	30.32	118.25	+87.93
1998	172.68	22.94	-149.74
1999	55.10	73.67	+18.57
2000	168.89	20.18	-148.71
2001	324.34	207.81	-116.53
<b>Total</b>	<b>1,561.45</b>	<b>5,656.56</b>	<b>+4,095.11</b>

Source: *Fairfax County 2001 Agricultural & Forestal District Annual Statistical Report*, Zoning Evaluation Division, Department of Planning and Zoning, Fairfax County, Virginia, July 1, 2002.

Meadows Park, Fairfax County Department of Transportation, and others to accomplish this.

Another condition by the Corps required stormwater management improvements on eight ponds in and around Greendale Golf Course. All construction is complete with

the exception of one pond. This pond, at the intersection of South Van Dorn Street and King Centre Drive, should be complete in the summer of 2002.

A third condition by the Corps required that Fairfax County submit a Monitoring and Maintenance Plan for these stormwater improvements. The plan details the monitoring and maintenance requirements for a ten-year period.

With the completion of all the conditions imposed by the Corps, construction of the extension of South Van Dorn Street to Telegraph Road should start in the summer of 2002.

## C. LEGISLATIVE UPDATE

Two pieces of environmental legislation that address ecological resources came out of the Bolling Commission (Commission of the Future of Virginia's Environment) and were passed into law.

- **HB 344 – Open space special districts.** Allows local governments to create, by ordinance, a service district with the authority to acquire interests in real property in order to preserve open space land. Currently, such service districts are limited to purchasing development rights that are to be dedicated as easements for conservation and open space purposes.
- **HB 346 – Clustering of single family dwellings so as to preserve open space.** Provides that a locality may provide in its zoning or subdivision ordinance standards, conditions and criteria for clustering of single family dwellings and the preservation of open space developments. In establishing such standards, conditions and criteria, the governing body may include any provisions it deems appropriate to ensure quality development, preservation of open space and compliance with its comprehensive plan and land use ordinances. If proposals for clustering of single family dwellings and the preservation of open space developments comply with the locality's adopted standards, conditions and criteria, the development and open space preservation shall be permitted by right under the local subdivision ordinance. The implementation and approval of the cluster development and open space preservation shall be done administratively by the locality's staff and without a public hearing. No local ordinance shall require that a special exception, special use, or conditional use permit be obtained for such developments. However, any such ordinance may exempt developments of two acres or less. In any instance where the proposed density is greater than the density permitted in the applicable land use ordinance, the locality may continue to require approval of a special exception, special use permit, conditional use permit, or rezoning. Localities that currently provide for clustering of single family dwellings upon approval of a special exception shall have until July 1, 2004, to comply with the provisions of this bill.



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## **D. RECOMMENDATIONS**

1. EQAC recommends that the County Board of Supervisors develop and implement a Countywide Natural Resource Management Plan – an ecological resources management plan that can be implemented through the policy and administrative branches of the County government structure. Two necessary tasks should be accomplished first -- prepare and adopt a unified Natural Resource Conservation Policy, and complete a Countywide Baseline Natural Resource Inventory. This is a continuing recommendation from past years. EQAC notes that progress is being made in this area due to efforts by the Fairfax County Park Authority staff in their efforts to establish a natural resources baseline inventory. The FCPA has developed a Countywide Green Infrastructure Map that appears to be a Natural Resource Inventory, or at least the basis for it. The Park Authority is also preparing a Natural Resources Plan. This long delayed plan is now scheduled for completion in the fall of 2002. EQAC fully supports these efforts, urging that they culminate in a Countywide Resource Management Plan. This is a continuing recommendation for past EQAC reports. EQAC's intent is that Fairfax County should have all the tools in place (the policy and the data) to create a plan that will support the active management and conservation of the County's natural resources.
2. In past Annual Reports, EQAC recommended that the County Board of Supervisors emphasize public-private partnerships that use private actions such as purchase of land and easement by existing or new land trusts to protect forests and other natural resources, including champion/historic trees. With the signing of a Memorandum of Understanding (MOU) between the Board of Supervisors and the Northern Virginia Conservation Trust, such a public-private partnership came into being. Thus EQAC's recommendation has been satisfied. EQAC commends the Board of Supervisors for this action and recommends continued support for this partnership. EQAC notes that the MOU is for a three-year period and therefore recommends continuing this MOU past the initial three years.
3. In reaction to the limited tree preservation authority provided by the County Code, and recommendations by the Tree Preservation Task Force, Fairfax County initiated a proposal to amend the Virginia State Code § 15.2-96 1, as part of its 2002 strong emphasis on tree preservation. Two bills were introduced in the 2002 Virginia State Legislative Assembly, but were tabled until the 2003 session due to opposition by the Virginia Building Association. EQAC recommends that the Board of Supervisors continue to support these proposals to amend the Virginia State Code § 15.2-96 1.

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